

## ANALYSIS OF INCIDENCE OF INFERTILITY IN CATTLE OF HOWRAH DISTRICT IN WEST BENGAL, INDIA

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**ABSTRACT:** A total of 823 numbers of cattle (342 Crossbred Jersey and 481 Non-descript) were presented for gynaeco-clinical examination after considering specific history of cattle at 26 fertility camps during January 2006 to December 2008 in flood prone rural areas of Howrah district of West Bengal, India. Statistical analysis of the data pointed out that among overall infertility problem incidence of anestrous and repeat breeding were 67.68 % and 32.32 % respectively. Incidence of anestrous was higher in Non-descript cattle (53.86 %) than that Crossbred Jersey cattle (46.14 %) and incidence of repeat breeding was also significantly ( $P < 0.001$ ) higher in non-descript cattle (68.05%) than that of crossbred (31.95%) animal. Irrespective of breeds the incidence of true anestrous, sub-estrus, anestrous due to pyometra with persistent corpus leuteum and infantile genitalia with other congenital disorders were 81.51 %, 9.34%, 1.44% and 7.71% respectively. It also revealed that incidence of repeat breeding due to anovulatory estrus, follicular cyst and uterine infection were 43.61%, 46.24%, and 10.15% respectively which were also significantly higher ( $P < 0.001$ ) in Non-descript cattle in comparison with Crossbred Jersey (72.4 vs. 27.0 %, 59.34 vs. 40.65% and 88.89 vs. 11.11% respectively for ND vs. CBJ).

**KEY WORDS:** Infertility, Cattle, Incidence, Anoestrus, Repeat Breeding.

### INTRODUCTION

Cattle become infertile when they are neither fertile nor completely sterile and are delayed or irregular for production of annual live calf. Although causes of infertility are many and may be complex, anestrous and repeat breeding have been identified as the main factors responsible for this malady (Parkinson 2001). It was reported that 10 to 30 % of lactation yield may be affected by infertility and reproductive disorders and 3 to 6 % of the herd is culled

every year in developed countries for these reasons (Erb and Martin 1980). Although authentic information regarding the economic losses of infertility under Indian condition is not readily available, the extent of the problem is likely to be greater in tropical countries. As per the reports of ICAR (2002) 18 – 40 % cattle are culled every year in India due to infertility or sterility.

Every missed heat leads to a loss of Rs. 500/- in case of lactating cows and the loss

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is almost double in case of heifers of the poor farmers under Indian condition (Kutty 2000). Anestrous, repeat breeding, cystic ovarian degeneration, uterine and tubal disorders have been observed as the most common gynaecological problems in cattle and buffaloes in India as per reports from different states (Agarwal *et al.* 2005). This report may be first of the above type from the state of West Bengal, India.

The present field study was undertaken to analyze the occurrence of anestrus and repeat breeding among the mostly stall fed Crossbred Jersey (CBJ) and semi-intensively reared local Non-descript(ND) cattle in flood prone areas in Amta-I, Amta-II and Udaynarapur blocks of Howrah district of West Bengal in lower gangetic Damoder riverine plain.

## MATERIALS AND METHODS

A total of 823 numbers of cattle (342 Crossbred Jersey and 481 Non-descript) with infertility problems were subjected to per-rectal gynecological examination after considering specific history of the cattle at 26 numbers of fertility camps organized at randomly selected villages during January 2006 to December 2008 under supervision of Paschim Banga Go Sampad Bikash Sanstha (PBGSBS). The various conditions responsible for infertility were primarily classified as anestrous and repeat breeding (Enkhia *et al.* 1983). Anestrous cases were further sub-divided as: a) true anestrous – cattle with smooth and nonfunctional ovaries , b) sub-estrus or silent estrus – cattle with ovaries having Corpus Leutium (C.L)examined clinically by per rectal examination), c) anestrous due to infantile genitalia and other congenital disorders like ovarian hypoplasia or rudimentary ovaries and unilateral agenesis of

uterine horn etc. and d) anestrous due to pyometra with persistent Corpus Leutium. Pregnancy as a cause of anestrous was left out of the study. Similarly repeat breeding cases were also sub-divided as: a) Repeat breeding due to anovulatory estrus without ovarian cyst, b) Repeat breeding with ovarian cyst and c) Repeat breeding due to uterine infection (Roberts 1986) respectively. Differences between heifer and cow and between types of anoestrus/repeat breeding conditions within breed were determined using Pearson's chi-square test, whereas Fisher's exact test along with Pearson's chi-square test was used to test relationship between type of anoestrus/repeat breeding and age as 20% of the cells had expected frequency of less than 5. Statistical analyses were performed as per Snedacor and Cochran (1994) and by using SAS software version 8.1 (SAS institute, Cary, North Carolina).

## RESULTS AND DISCUSSIONS

Incidence of anoestrus and repeat breeding with their different forms are presented in Table 1.

Out of 823 infertile cattle examined, incidence of anestrous and repeat breeding was found in 557 number of cattle (67.68%) and 266 number of cattle (32.32%) respectively where the former is slightly higher than that (> 50%) found by Kodagali (1974), Barr and Hushim (1968), Chauhan and Singh (1979), Kumar and Kumar (1993). The incidence rate of repeat breeding was also higher in present study than that of Kaikani *et al.* 1983 (21.9% in Holstein and Gir crosses) and Singh *et al.* 1983 ( 7.4 – 18.6 % in Holstein, Danish and Sahiwal crosses), but similar with the findings of Pandit *et al.* (1982) i.e. 10 -35% in India.

**Table1: Analysis of incidence of anestrous and repeat breeding according to gynaecological examination.**

	Non-descript										Total (%)
	Heifer	Cow	Total (%)	$\chi^2$ value	P-value	Heifer	Cow	Total (%)	$\chi^2$ value	P-value	
<b>Anestrus*</b>											
a. True anestrus	140	111	251 (55.2)	3.35	0.067	165	38	203 (44.8)	79.5	<0.011	454 (81.51)
b. Sub/silent estrus	14	8	22 (42.3)	1.64	0.20	22	8	30 (57.7)	6.53	0.011	51 (9.34)
c. Infantile genitalia	11	8	19 (44.2)	0.47	0.49	16	8	24 (55.8)	2.67	0.10	43 (7.71)
d. Pyometra and PCL	5	3	8 (100.0)	0.5	0.48	0	0	0 (00.0)	-	-	16 (1.44)
<b>Total (%)</b>	<b>170</b>	<b>130</b>	<b>300</b>	<b>5.33</b>	<b>0.021</b>	<b>203</b>	<b>54</b>	<b>257</b>	<b>86.4</b>	<b>&lt;0.001</b>	<b>557 (67.68)</b>
	<b>(56.67)</b>	<b>(43.33)</b>	<b>(53.86)</b>			<b>(79.0)</b>	<b>(21.0)</b>	<b>(46.14)</b>			
$\chi^2$ value	299.2	253.3	552.1			348.0	62.4				
P-value	<0.001	<0.001	<0.001			<0.001	<0.001				
<b>Repeat breeding**</b>											
a. Anovulatory estrus without ovarian cyst	22	62	84 (72.4)	19.0	<0.001	24	8	32 (27.6)	8.0	0.005	116 (43.61)
b. With ovarian cyst	16	57	73 (59.3)	23.0	<0.001	16	34	50 (40.7)	6.48	0.011	123 (46.24)
c. Uterine infaction	5	19	24 (88.9)	8.17	0.004	3	0	3 (11.1)	3	0.083	27 (10.15)
<b>Total (%)</b>	<b>43</b>	<b>138</b>	<b>181</b>	<b>49.9</b>	<b>&lt;0.001</b>	<b>43</b>	<b>42</b>	<b>85</b>	<b>0.012</b>	<b>0.91</b>	<b>266 (32.32)</b>
	<b>(23.72)</b>	<b>(76.28)</b>	<b>(68.05)</b>			<b>(50.6)</b>	<b>(49.4)</b>	<b>(31.95)</b>			
$\chi^2$ value	10.4	14.04	33.8			15.7	45.1	39.7			
P-value	0.006	<0.001	<0.001			<0.001	<0.001	<0.001			

\*The relationship between age and anoestrus type within non-descript  $\chi^2 = 0.638$ , and P- value = 0.88; Fisher's exact test P- value = 0.89) and between age and anoestrus type within crossbred Jersey  $\chi^2 = 3.43$ , and P- value = 0.16; Fisher's exact test P- value = 0.18).

\*\*The relationship between age and repeat breeding type within non-descript  $\chi^2 = 0.52$  and P- value = 0.77; Fisher's exact test P- value = 0.82) and between age and anoestrus type within crossbred Jersey  $\chi^2 = 17.5$ , and P- value = <0.001; Fisher's exact test P- value = <0.001).

Incidence of anestrous was 53.86% and 46.14% in Non-descript and Crossbred Jersy cattle where as the incidence of repeat breeding were 68.05% and 31.95% respectively. Incidence of repeat breeding was significantly (P<0.001) higher in Non-descript cattle than CBJ and agreed with the findings (anestrous vs. repeat breeding: 25 – 67% vs. 2 – 20% ) of Singh *et al.*(2003) and Pandit ( 2004).

Classification of 557 cases of anestrous cases revealed that occurrence of true anestrous, sub-estrus or silent heat, anestrous due to infantile genitalia and that due to pyometra with persistent C.L or luteal cyst were 81.51%, 9.34%, 7.71% and 1.44% respectively. However, it was found that incidence of anestrous was significantly (P<0.001) higher among CBJ heifers (79%) than CBJ cows (21%). It was also found that true anestrous (81.51%) was the major factor responsible for the condition among cattle probably for malnutrition and heavy parasitic infestation in the study area as reported by Samanta and Santra (2007) which was flooded every year. Agarwal *et al.*(2005) also reported that the incidence of true anestrous in cattle and buffalo varied widely depending upon the level of feeding and management.

Analysis of data of 266 number of repeater revealed that the occurrence of repeat breeding due to anovulatory estrus without ovarian cyst, ovarian cyst and uterine infection were 43.61%, 46.24%, and 10.15% respectively which were significantly higher (P<0.001) in Non-descript cattle in comparison with CBJ (72.4 vs. 27.0 %, 59.34 vs. 40.65% and 88.89 vs. 11.11% respectively for ND vs. CBJ). It was also found that occurrence of repeat breeding was also significantly higher among ND cows than ND heifers probably due to lactation stress and low

plane of nutrition. Incidence of uterine infection was higher in ND cattle as the majority of these animals were under natural service.

To conclude, true anestrous was the major problem among all infertile cattle in the study area and this study can be extended on hormonal assay, macro and micro mineral estimation in blood as well as soil etc. to find out the pin point cause of infertility in this region to adopt economic managemental practices.

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